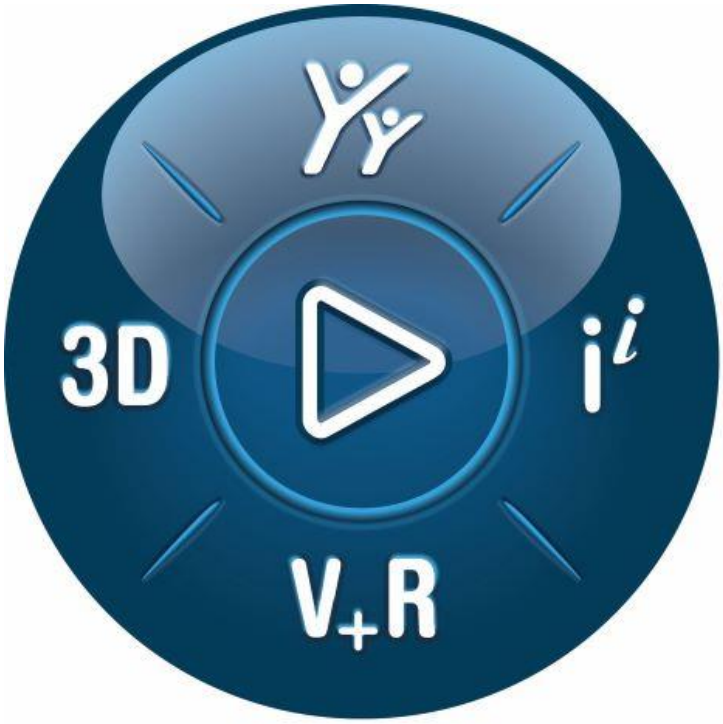
SIMULIA EURONORTH REGIONAL USER MEETING 2025

Essential Guide



3DEXPERIENCE®

Contents

Your Exclusive Invitation to the SIMULIA EURONORTH Regional User Meeting (RUM)

Join us in Manchester at the Mercure Manchester Piccadilly Hotel on June 3-4 for the SIMULIA EURONORTH Regional User Meeting – a must-attend event designed specifically for our valued customers.

Inside this eBook, you'll find all the essential details to help you decide to join us for what promises to be our best event yet. Get a sneak peek at the preliminary agenda and discover how this meeting will benefit you:

What Awaits You:

- Complimentary Access: Enjoy full access to both days of the RUM – completely free of charge
- Inspirational Keynote: Hear from industry leaders at TETRA PAK and MEDTRONIC!
- Real-World Insights: Learn from over 22 customer presentations showcasing practical applications
- Tailored Breakout Sessions: Deep dive into your area of interest with 4 focused technology tracks:
    - Structures
    - Electromagnetic
    - Multibody System Dynamics & Motion Simulation
    - Fluids
- SIMULIA Innovation: Get the latest updates on the SIMULIA portfolio directly from our R&D team
- Unlock the Power of 3DEXPERIENCE: Discover how to maximize the value of your simulation processes and data
- Interactive Exhibition: Explore cutting-edge solutions and connect with industry experts
- Valuable Networking: Enjoy a free networking banquet on the evening of June 3rd
- Focused Content: Benefit from presentations and discussions tailored to local industry trends and challenges
- Connect with Peers: Engage with other SIMULIA users, share knowledge, and build valuable connections.

Who Should Be There?

This meeting is ideal for industry professionals, engineering teams, team leaders, managers, and directors seeking to leverage state-of-the-art multiscale, multi-discipline simulation.

We look forward to welcoming you to Manchester!

Venue & Accommodation

This year's SIMULIA EURONORTH Regional User Meeting will take place at the conveniently located Mercure Manchester Piccadilly Hotel. For more information about the venue, please visit https://www.mercuremanchester.co.uk

We have secured a special discounted rate of £155 per night for single occupancy bed and breakfast. To take advantage of this offer, please contact the hotel directly at 0161 751 1412 - Option 1 and quote '2506DASSAU' when making your reservation.

We strongly recommend booking your accommodation as soon as possible, as this discounted rate is available for a limited time and rooms are expected to fill quickly.

Hotel Details:
Mercure Manchester Piccadilly Hotel
Portland Street
Manchester
M1 4PH (For Sat Nav, please use postcode M1 4DY)
Phone: 0844 815 9024

Registration

We are delighted to offer complimentary registration for both days of the conference, including the networking banquet. However, due to anticipated high demand and limited spaces, it is crucial to register only if you are certain you can attend. If your plans change, please notify us as soon as possible so your place can be offered to another attendee.

Click here to register OR Scan QR code to register

Agenda

Day One | 3rd June	
08:30 – 09:00	Registration
09:00 – 09:15	Welcome & Introduction | Sebastien Gautier, Dassault Systèmes
09:15 – 09:45	SIMULIA Brand Insights | Chris Whiting, Dassault Systèmes
09:45 – 10:15	**KEYNOTE SPEAKER: Per Karlsson & Karolina Wamsler, TETRA PAK** Simulating towards the world's most sustainable food package
10:15 – 10:45	Mid-Morning Break & Exhibition
10:45 – 11:10	MODSIM: The importance of being unified | Joe Amodeo, Dassault Systèmes
11:10 – 11:40	V+R Testing to Support the Certification Process | Anthony Goff & Matthew Whittaker, Dassault Systèmes
11:40 – 12:05	Customer Presentation: To be announced soon!
12:05 – 13:05	Lunch & Exhibition
13:05 – 13:30	Democratised Design of Experiments within 3D Experience at Jaguar Land Rover | Michael Brown, Jaguar Land Rover
13:30 – 14:00	Customer Presentation: To be announced soon!
14:00 – 14:25	Visual Scripting for parametric CAD and simulation studies on 3DExperience platform | Slawomir Polanski, TECHNIA UK
14:25 – 14:55	Mid-Afternoon break & Exhibition
14:55 – 15:25	In-silico Modelling of Multi-strike Insertion and Torsional Resistance of Tapered Revision Hip Stems: Insight into Spline Design Philosophy | Lin Wang, Johnson & Johnson MedTech
15:25 – 15:50	Carrera Race Track – A Multiphysics Project on 3DEXPERIENCE | Gregg Hunt, SIMUSERV
15:50 – 16:15	Panel Discussion: How Will AI Reshape the Future of Design and Simulation?
16:15 – 16:45	Machine Learning for CFD
16:45 – 17:00	Closing Remarks
Refresh & Reset: Break Before Evening Events	
18:00 – 18:30	Drinks Reception
18:30 – 21:30	Evening Banquet

Day Two | 4th June				
08:30 – 09:00	Registration			
09:00 – 09:15	Welcome & Introduction			
09:15 – 09:45	KEYNOTE SPEAKER: David Martin & David Nolan, MEDTRONIC Role of Modelling & Simulation Tools in the Development of Transcatheter Heart Valve Devices at Medtronic			
09:45 – 10:15	Customer Presentation: To be announced soon!			
10:15 – 10:35	Mid-Morning Break & Exhibition			
10:35 – 12:15	Technology Breakout Sessions (Choose one*)			
Structures		Electromagnetic	Multibody System Dynamics & Motion Simulation	Fluids
12:15 – 13:30	Lunch & Exhibition			
13:30 – 15:30	Continued | Technology Breakout Sessions (Choose one*)			
Structures		Electromagnetic	Multibody System Dynamics & Motion Simulation	Fluids
15:30 – 15:35	End of Conference			

Technology Breakout Sessions

Scheduled for Wednesday 4th June, these focused sessions offer a thorough and in-depth understanding of the core SIMULIA Disciplines. Our knowledgeable SIMULIA technical experts will lead engaging presentations, providing clarity on their functionalities and potential applications. Additionally, you will hear directly from customer presenters who will share real-world examples and unique perspectives on leveraging SIMULIA technology.

More information below!

Structures Technology Breakout

Morning Session:

SIMULIA 3DEXPERIENCE Structures Update | Leon Cordingley, Dassault Systèmes

This presentation will highlight the latest developments in modelling, scenario definition and results post-processing using 3DEXPERIENCE Structures applications as of 2025x FD02.

A simulation workflow for ergonomic design of in-ear headphones using Abaqus | Kilwa Arola, PLM Group

In-ear headphones or earbuds have become very popular, and we see people with headphones everywhere. Regardless of all innovations, it's very difficult to find one design that fits every individual ear. Companies that develop and manufacture earbuds struggle with this issue.
The requirements for a successful earbud design are a comfortable and secure fit, good sound, and visual appeal. Traditionally, the design of earbuds has relied on iterations through trial and error. Prototypes of earbud designs have been made, and their ergonomics have been evaluated in human ergonomics tests. In the test, selected test subjects try out the design in their ears and rate the designs for fit, comfort, and other variables. This design process has shortcomings: (i) Creating physical prototypes is time-consuming, (ii) An adequate number of test subjects must be recruited for the ergonomics tests, and (iii) Results can be biased.
In this presentation a cutting-edge technology to solve the problem is presented. The solution is a comfort simulation using realistic FEM models of the ear and earbud. This can help the design team to test and optimize earbud ergonomics an order of magnitude faster and more precisely than before.
The simulation process consists of two parts: (i) A structural mechanics simulation of the interaction between the earbud and the ear using scripted automated model building in Abaqus/CAE and running the models using the Abaqus solvers. (ii) Further post processing of the simulation results into the comfort and ergonomics perceived by people when wearing the earbuds.

An efficient means of characterising the performance of threaded connections.

Escape of particulate material through a threaded connection during an impact event is important for understanding the performance of transport packaging. A methodology is presented for a relatively economical comparative measure of thread engagement utilising steady state heat transfer methodology to calculate a resistance to flow. Although this method does not provide a direct method of calculating the performance of the thread it allows comparison of different impact scenarios to provide information for designing test methodology.

FEA across the ages: From my BSc thesis to modern-day usage of Abaqus | Bob Johnson, REAL

My final year thesis towards a BSc Honours Degree in Mechanical Engineering concentrated on a simple ladder-type frame. Such frames are (still) widely used in heavy goods vehicles in order to form the main longitudinal chassis. Mine differed from that used in most vehicles in that tubular sections were used as opposed to, say, the use of channel sections and/or "I" sections. The main type of loading to be examined was that of torsion such as when one wheel was placed on a kerb and the rest on the road. A steel tubular frame was made and supported at three corners while a series of weights was applied to the free corner. The displacement response of a simple 4-member frame was measured first and then two further cross-braces were added and the measurements repeated. Finite Element Analysis programs

(displacement method and the force method) were written by the author and those simulations were compared with the measured displacement response. The intention for the RUM is to make a modern-day 3D FEA model of both the four member and the six-member ladder type frames and subject these to the corner loading as measured on test. All results will be compared and briefly discussed. The final section of the presentation will concentrate on a typical modern-day problem where chain segments make contact with a toothed wheel. Currently we run two simulations: the first with a spoke aligned to the main loading direction and the second with the gap (between two spokes) aligned to the main loading direction. Should this abstract be accepted then we will strive to facilitate rotation of the wheel such that we see the transition in stress state as the wheel rotates by (say) one-quarter of a turn. The author will strive to make the presentation useful and interesting to the vast majority

Afternoon Session:

SIMULIA Abaqus Update 2025 | Leon Cordingley, Dassault Systèmes

A high-level presentation highlighting major updates to Abaqus since 2024xFD03 (inclusive) with a more detailed focus on Abaqus/CAE, major enhancements in A/Std and A/Xpl, and Simulation Manager/cloud

Coupled Workflows for Thermomechanical and Oxidative Aging Analysis in Elastomers | Thomas Ebbott, Endurica Europe

The temperature distribution and history in elastomeric structures is important for several reasons. Temperature directly affects the current viscoelastic properties which can impact performance, and it impacts the fracture properties related to fatigue life. Higher temperatures can also accelerate chemical reactions leading to aging of the material, and aging can cause subsequent degradation of mechanical properties.

Coupled workflows for steady-state temperature and stress-strain fields in elastomeric structures are well established. However, many elastomeric structures exhibit transient response due to time varying loading, or other factors. Some elastomeric structures are designed to operate in a transient environment, so the steady-state analysis is neither accurate nor useful. This work presents some recent developments for transient thermomechanical analysis including viscoelastic self-heating and a new exothermic reaction capability to simulate chemical break-down due to high operating temperatures. A developing workflow is presented to simulate the diffusion of air through an elastomeric structure together with the reaction of oxygen to understand the impact of oxidative aging.

Co-simulation with ABAQUS and Endurica is used to accomplish these coupled analyses. A new Endurica product, Endurica MP, is introduced to provide the "Multi-Physics" capabilities required for these advanced workflows. Demonstration of the workflows is provided through the analysis of tyres and other elastomeric structures.

Development of user subroutine VUSDFLD for damage evaluation in explicit simulations using Abaqus | Robert Luo, Trelleborg

Abaqus software has been used in Trelleborg AVS since the 1980s. In addition to general simulation capabilities, the software provides users with more functions to solve complex engineering issues, such as user subroutines. In a large deformation with non-linear materials involved, user subroutine VUSDFLD could be used for crack propagations in explicit simulations. This work describes a procedure to introduce subroutine VUSDFLD in explicit simulations for rubber antivibration applications. Since this routine provides access to material point quantities, a user can define any new user-defined field to evaluate the

material damage, such as life prediction of rubber components. The following main points are presented to define the user routine:
1. Assigning predefined fields
2. Keeping data in large arrays
3. Output controls
4. Stress/strain data in a 1D array and a 2D array
5. Element deletion for damage simulation

I am very much appreciated to Stuart Nixon from SIMULIA for his support.

Finite Element Adaptation Of The Thums Model In Abaqus For Forward Head Posture Simulation: Challenges And Advancements In Hyperelastic Ivd Modeling | Katterine Rios and Afonso J.C. Silva, University College Dublin & TEMA

The Total Human Model for Safety (THUMS), developed by Toyota Corporation, is a highly biofidelic finite element (FE) model widely used for biomechanical analysis.

Originally designed for different simulation platform, THUMS was adapted for use in Abaqus for this study. Given the focus on forward head posture, the model was further modified to retain only the vertebral column while preserving geometric integrity.

To validate this adaptation, initial simulations employed static structural analysis, assuming isotropic elastic materials. However, enhancing biomechanical accuracy requires incorporating hyperelastic material properties for intervertebral discs (IVDs). A key challenge in this transition arises from THUMS' intricate geometry, characterized by a high element-to-node ratio due to shared nodes among components. This complexity increases computational demands and may cause convergence issues when implementing hyperelastic materials.

This refinement is crucial for advancing toward dynamic implicit simulations, where accurate time-step management is essential for predictive human body modelling. Addressing these challenges will improve the model's fidelity in representing spinal biomechanics under dynamic loads, enhancing its utility for impact and injury analysis.

This study outlines the methodology for material model transition, examines computational constraints, and proposes solutions to improve stability and efficiency in hyperelastic FE modelling. The findings contribute to optimizing THUMS for advanced biomechanical simulations, expanding its applications in injury biomechanics and human safety research.

Keywords: Spinal Biomechanics, Human Body Modelling, Computational Efficiency, Material Property Optimization.

Bridging Abaqus with Other Engineering Software Using Scientific Workflows | Zeyuan Miao, University of Manchester

Complex engineering design often involves simulation workflows that consist of multiple sub-steps, integrates various software tools, and handles large-scale scientific data. Traditional workflow management functions built into engineering software, while convenient, lack the capability to integrate and coordinate multiple third-party software tools. Scientific workflow engines offer a scalable and automated approach to managing simulation pipelines. These engines allow users to define structured workflows that coordinate multiple software tools, automate data transfer, and streamline computational processes. By adhering to the FAIR (Findable, Accessible, Interoperable, and Reusable) principles, workflow engines ensure that simulation data and processes are well-documented, easily shared, and seamlessly integrated

across different computational environments. However, setting up such workflows often requires expertise. Once established, they can be reused, shared, and adapted for similar tasks, reducing the manual workload and making advanced simulations more accessible to a broader engineering community. This work presents a framework leveraging the Galaxy workflow engine to streamline engineering simulations by linking Abaqus with other computational tools. We demonstrate this approach through a neutronics heating simulation, where OpenMC handles neutron transport, and Abaqus performs thermal analysis. By automating simulation orchestration, this integration improves efficiency, usability, and reproducibility, making advanced multiphysics simulations more accessible to engineers and researchers. This integration enables Abaqus users to extend their simulation capabilities beyond traditional setups, facilitating multi-physics modeling and large-scale analysis with minimal manual effort. By leveraging scientific workflows, engineers and researchers can focus more on design and analysis rather than on repetitive simulation management tasks.

Using Abaqus to assess craze initiation in PVDF pressure liners | Henrik Granum, Enodo AS

Flexible pipes are frequently used to transport oil and gas, sometimes under extreme operational conditions. Temperatures ranging from below freezing to over 130°C and pressures above 1000 bar may occur. An essential part of a flexible pipe is the pressure barrier which is usually made of a polymer. We have looked closer at PVDF (polyvinyldifluoride) which offers excellent material properties, but is susceptible to crazing. Crazing has on occasion been observed in flexible pipe inner sheaths in operation. Whilst no structural consequences have been observed, significant efforts have been made to investigate the root cause of the mechanism and develop a predictive framework.

Material tests were conducted to characterize the material properties and calibrate the material model. The material tests included compression and tension tests with different stress triaxialities, temperatures and strain rates. Based on the experimental results, a new material model was developed and implemented as a user-defined material subroutine (UMAT) in Abaqus.

A custom-built pressure rig was used to test circular discs up to pressures of 2000 bar. The pressurizing fluid successfully introduced crazes in the discs. Simulations of the tests were performed to validate the material model and to establish a material capacity curve for the onset of crazing. The material capacity curve can be used in simulations of different flexible pipe geometries to find its capacity.

Electromagnetic Technology Breakout

Morning Session:

SIMULIA Electromagnetics 2025 Update | Sajid Asif, Dassault Systèmes

This talk will highlight the best technology of CST Studio Suite and the Electromagnetics Engineer on 3DEXPERIENCE® Cloud. The updates will focus on the major industry process like antenna and microwave component engineering as well as communication and detection. In addition, the talk will introduce the enhancements for EMC compliance analysis for PCB and Wire Harness, considering the effect of mechanical assembly.

Unifying Radio-Frequency measurement, modelling and simulation workflows of active circuits using IVCAD Suite | Wafae El Fennouri, AMCAD Engineering

RF and MW communications are currently used in many fields such as 5G/6G communication systems, or space/defense equipment.
Before being emitted by an antenna for wireless transmission, RF signals are processed by active circuits located upstream of the antenna, either for their transmission or their reception. This presentation will show how IVCAD Suite can

provide a consistent workflow to measure, model, and simulate such active circuits, with a focus on power amplifiers, which are one of the most important elements in the chain. There is therefore a natural synergy between CST Suite and IVCAD Suite to simulate interactions between antenna and active circuits to better design global RF communication systems.

Reduction of magnetic noise and vibrations in electrical machines drives with SIMULIA Manatee | Hélène Bonnefond, Dassault Systèmes

Acoustic noise and vibrations, due to electromagnetic forces induced by electric machine operation (called e-NVH in automotive applications), can be a significant problem for many industries including transportation & mobility, industrial equipment, aerospace & defence, marine & offshore, among others. Tackling noise issues after manufacturing can be very expensive and may degrade electric drive performance criteria for efficiency, cooling, and weight. Therefore, an efficient virtual prototyping workflow for identifying and solving e-NVH issues during the design stage is key to improving engineering productivity, reducing prototyping manufacturing & testing costs, accelerating development times, and optimizing product performance.

Manatee software, part of the SIMULIA brand, is a CAE collaborative environment to assess and control magnetic noise and vibration levels from concept stage of electric motors to preliminary design stage of electric drives. Manatee provides flexible modelling and multiphysics simulation options for electrical, magnetic, structural dynamics & acoustics. It also comes with high interoperability, allowing flux import from CST Studio Suite and Opera as well as modal basis import from Abaqus. It comes with predefined simulation workflows and specialized magnetic noise mitigation techniques (e.g. skewing, notching, and harmonic current injection) which makes it complementary to the simulation solutions in the SIMULIA portfolio. Manatee facilitates collaboration between design engineers (electrical, control, mechanical, and NVH engineers) while standardizing the interfaces between electric machine designers and integrators, as well as electrical and mechanical departments.

During this presentation, the e-NVH simulation workflow of an interior permanent magnet synchronous machine for automotive traction is demonstrated at e-motor and electric drive levels. The source of noise is quickly identified and a mitigation technique based on rotor notching is optimized, providing 10 dB reduction in 15min of calculations.

Afternoon Session:

5G to 6G | Devices & Network | Jonathan Oakley, Dassault Systèmes

6G promises seamless connectivity for consumers, industries and cities. It aims to provide robust service in dense urban areas and challenging environments. In this presentation, we will explore advanced antenna systems and how they might play a role in the future of wireless technology. We will look at the challenges of delivering higher data rates, improving coverage, and ensuring reliable connectivity as well as some lessons learned from the 5G rollout. Topics will include compliance, shared aperture antenna arrays, gigantic MIMO, GRIN lenses and Reflective Intelligent Surfaces (RIS).

Measurement and Simulation of Demagnetization in a Prototype Quadrupole | Alexander Bainbridge, STFC and Ben Pine Dassault Systèmes

We present the design, construction, measurement and troubleshooting of a prototype hybrid Halbach quadrupole magnet. This magnet was significantly under-strength due to

local demagnetization in the permanent magnet material. We discuss how this effect was uncovered, measured and reconstructed in simulations.

Trapping Antiprotons: Modelling Penning-Malmberg Traps for AEgIS at CERN

The AEgIS collaboration at CERN aims to investigate the gravitational behaviour of antimatter by utilizing a pulsed beam of cold antihydrogen atoms. A crucial aspect of this experiment is the efficient capture, transfer, cooling, and controlled release of antiprotons towards the Positronium converter target. These antiprotons are confined within a Penning-Malmberg trap, consisting of cylindrical electrodes, with radial confinement provided by strong axial magnetic fields of 1T and 5T from superconducting magnets. This talk will focus on modelling the Penning-Malmberg trap using the ES-PIC solver in CST Studio and explore future prospects for developing a complete Digital Twin of the experiment.

Virtual Testing for EMC Compliance | Jonathan Oakley, Dassault Systèmes

Electronic products must comply with a range of international EMC standards before they can be launched into the market. The traditional process involves building physical prototypes, performing pre-compliance physical tests and iterating designs toward compliance, which can be very time-consuming and costly.

In this presentation we provide an overview of electromagnetic simulation methodologies and workflows for performing virtual tests for EMC compliance, enabling hardware prototyping and pre-compliance testing to be minimized, with the associated time-saving and cost benefits. We will highlight key simulation technology for virtual tests for EMC compliance and give examples of simulating various tests, including conducted emissions, conducted susceptibility, radiated emissions and radiated susceptibility.

Multibody System Dynamics & Motion Simulation Technology Breakout

Morning Session:

Simpack-Abaqus co-simulation – Technology and Workflows | Avijit Chauhan, Dassault Systèmes

As long as deformations remain small, reduced-order flexible body models generated using Finite Element (FE) codes are sufficient to represent the model behaviour in Multibody Dynamics (MBD) analysis. However, in scenarios involving complex flexible body contact interactions with nonlinear deformation and material nonlinearity, these reduced-order models become inadequate for predicting nonlinear transient results. To address these challenges, SIMULIA presents an advanced co-simulation technology that integrates the powerful Simpack and Abaqus solvers. This technology enables the coupling of Simpack models with Abaqus/Explicit or Abaqus/Standard models via the CSE director, facilitating co-simulation between highly nonlinear Abaqus bodies and Simpack system models for extreme and abuse loading conditions.

This seminar will provide an overview of the co-simulation technology, its use cases, and the latest advancements based on insights gained from Auto OEMs. Participants will learn about different co-simulation procedures, best practices, and limitations. The seminar will also illustrate application examples from electric vehicles, including an abuse-loading event in MBD simulation coupled with Abaqus tyres, highlighting the robustness of this technology. Join us to explore the capabilities and practical applications of this cutting-edge co-simulation approach.

Simpack Automotive Database and Realtime Profiler- Introduction | Karan Shah and Avijit Chauhan, Dassault Systèmes


Introduction to the comprehensive Simpack Automotive Wizard Database. The seminar is aimed to show the audience how the database can be used to standardise model setup and calculations using predefined templates, quickly setup complex vehicle models for non-expert MBS users. There will be an introduction to the Simpack Realtime technology and also to the new Realtime profiler. Users can now use the Realtime profiler to understand the Realtime performance of their models in great detail and potentially improve it from the results shown by the profiler.

Afternoon Session:

Multibody Simulation Overview and Simpack 2025x Updates | Avijit Chauhan, Dassault Systèmes

Brief Introduction to Simpack and the most important Simpack 2025x updates

Fluids Technology Breakout

Morning Session:

SIMULIA Fluids Portfolio Update

SIMULIA offers a comprehensive Fluids portfolio that delivers hundreds of workflows to customers across industries. In this presentation, we'll summarize highlights and recent deliveries in the PowerFLOW suite, Fluid Dynamics Engineer, Plastics Injection Engineer and other fluids roles. All roles embrace the MODSIM paradigm: the tight integration of design engineering and simulation that enables full associativity between CAD and simulation model, automatic updates when the design changes, and the capability for multiphysics optimization. Key enhancements have been delivered in all steps of the simulation process, including model preparation and geometry idealization, mesh generation, and results exploration. We'll also describe important advancements in solver capabilities, including GPU computing, and improved user experience for scenario creation.

Accelerate Aerodynamics & Aeroacoustics with PowerFLOW on GPU

In today's automotive industry, vehicle development teams have to meet strict deadlines and have limited resources to iterate and evolve the design and performance of the vehicle exterior. The number of possible styling variants and configurations can often reach into the hundreds. Therefore, increased performance and accuracy of Computational Fluid Dynamics (CFD) simulations have become a main objective of every vehicle OEM. Today, GPGPU memory and performance has reached a point where there is an increased interest in their usage for aerodynamic & aeroacoustics simulations. GPGPUs offer potential simulation performance improvements due to lower power consumption and hardware costs. With this in mind Dassault Systèmes has recently implemented a GPU based version of its Lattice Boltzmann Method (LBM) fluid solver PowerFLOW. LBM is known to be well suited for GPU computation as the method is naturally vectorizable. Additionally, as a low dissipation, inherently transient approach, it is also well-suited for accurate evaluation of external automotive aerodynamics & aeroacoustics.
This talk will provide a detailed comparison between GPGPU based PowerFLOW results vs its x86 CPU based equivalent using the publicly available DrivAer aerodynamic model. The resulting flow structures and forces will be compared to show that the results are numerically equivalent. Additionally, aeroacoustics examples for workflows such as greenhouse wind noise & fan noise will be demonstrated. A

comparison of turn-around time and scalability on NVIDA A100, H100 & L40 cards will also be demonstrated showing significant potential to reduce overall simulation time for vehicle analysis using GPGPUs.

Afternoon Session:

Accelerating Electric Drive Innovation: Multiphase Simulation with XFLOW

Abstract: As the automotive industry transitions toward electrification, there is a critical need to develop electric powertrain systems that match or exceed the performance of traditional combustion engines. This presentation introduces innovative digital simulation workflows that enable comprehensive performance evaluation throughout the development cycle, significantly reducing the risk of late-stage complications and associated costs.

Our focus centres on two crucial aspects of electric drive unit design: gear lubrication and end-winding thermal management. Through XFLOW's advanced simulation capabilities, we demonstrate precise modelling of gear splash patterns and lubrication effectiveness across various housing configurations. Additionally, we showcase our validated solution for end-winding cooling optimization, combining XFLOW's direct dripping simulation with the 3DEXPERIENCE platform's conduction solver to deliver accurate thermal performance assessments.

Improved Fluid Dynamics Engineer on the 3DEXPERIENCE platform

To keep up with growing competitive pressures and customer demands, designers and engineers must rapidly evaluate the performance of their product designs. A Design Engineer plays a critical role in optimizing the product development cycle by ensuring the correct design selection based on simulations in the initial phase of product development. This is possible by equipping them with an easy-to-use and faster simulation tool to finalize the design early. A new Fluid Dynamics Engineer role on the 3DEXPERIENCE platform provides an enhanced user experience with a new automated meshing tool. The improved user experience will help streamline the design process, while the new meshing tool will deliver faster results. Additionally, for complex scenarios, multi-material automated meshing ensures accurate results. The new Fluid Dynamics Engineer role, combined with MODSIM capabilities, enables faster design iterations on the 3DEXPERIENCE platform.
In this presentation, we will provide a glimpse of the new user experience, meshing tools, and intuitive scenario setup, along with a few industrial examples. Stay tuned to explore the new Fluid Dynamics Engineer experience!

Keynote - **Tetra Pak**

Simulating towards the world’s most sustainable food package

Tuesday, June 3, 2025

Tetra Pak is a global leader in food processing and packaging solutions, committed to sustainability and quality. We utilize several different disciplines of simulation to develop both the consumer package and machine components. This involves multiphysics simulations as well as modelling of complex materials, including paperboard and polymers. Through these simulations we achieve a comprehensive understanding of our packaging performance, enhancing efficiency and quality to meet diverse and everchanging customer needs.

Per Karlsson, Technology Specialist | Tetra Pak

Per has worked with simulation at Tetra Pak for the last 15 years and currently serves as a Technology Specialist in the Sealing Technology department.

This department is responsible for creating the welds that ensure the tightness of the packages. His main focus is on material modelling and the interaction between the filling machine and the packing material, specifically during the sealing process.

Karolina Wamsler, Development Engineer | Tetra Pak

Karolina is a Development Engineer at Tetra Pak, specialising in modelling and simulations within the Sealing Technology department. This team is responsible for ensuring the integrity and tightness of package seals. Karolina holds a Master of Physics in Computational physics from the University of Edinburgh. In her job she focuses on structural and thermal simulations, with a special interest in programming.

Keynote – **Medtronic**

Role of Modelling & Simulation Tools in the Development of Transcatheter Heart Valve Devices at Medtronic

Wednesday, June 4, 2025

Transcatheter heart valve replacement is a procedure for the treatment of symptomatic heart valve disease. During this procedure, a bioprosthetic valve device is first crimped to a low profile in a catheter delivery system. The delivery system is then tracked through the native vasculature and the bioprosthetic valve is then deployed into a failing native valve where it regulates blood flow between the chambers of the heart. The bioprosthetic heart valve is typically comprised of a metallic frame structure to which a tissue valve subassembly is attached.

Modelling tools are widely used in all stages of the design and development of transcatheter heart valves at Medtronic. Modelling is used to accelerate concept assessment, for detailed design optimization, and in design verification activities prior to regulatory submission. In this presentation we aim to provide a brief overview of how modelling tools are used in product development at Medtronic. We will also share our experience from a recent collaboration with Dassault Systèmes to develop a method for simulating the full crimping of a heart valve device from its manufactured diameter down an insertable diameter. This analysis is very challenging, involving multiple nonlinear materials that are subjected to extreme deformations resulting in buckling deformation modes and multiple complex interactions. The learnings from this work have been invaluable to internal development activities at Medtronic.

David Martin, Principal Engineer | Medtronic

- R&D Engineer, Medtronic (2014-2025)
- Postdoctoral Fellow, University College Dublin (2013-2014)
- PhD Student, Dublin Institute of Technology (2007-2013)

David Nolan, Principal Engineer | Medtronic

- R&D Engineer, Medtronic (2020-2025)
- Postdoctoral Fellow and Assistant Professor, Trinity College Dublin (2015-2020)
- PhD Student, University of Galway (2011-2015)

New Feature for 2025!

Panel Discussion: How Will AI Reshape the Future of Design and Simulation?

Tuesday, June 3, 2025

Artificial Intelligence is rapidly transforming the design and simulation landscape, offering powerful new ways to solve complex engineering problems, accelerate workflows, and unlock deeper insights from data.

Join this forward-looking panel as we explore how AI is being applied across simulation domains—FEA, CFD, EMAG, MBS, and beyond—and what that means for the future of engineering innovation.

We will discuss real-world perspectives from customers and R&D leaders on the current simulation challenges, the evolving role of data, and how AI could address persistent pain points in performance, accuracy, and speed.

Hear how organizations are beginning to trust AI-generated results, what types of data are being used to train models, and whether continuous learning is essential for AI in engineering contexts.

The session will also explore the shifting skillsets required for tomorrow's simulation engineers, how we can upskill the workforce, and whether AI can truly democratize simulation across industries.

Networking - Connect to your local community

Connect with over 150 colleagues from across EURONORTH's diverse professional landscape at the 2025 RUM!

We've built the agenda with plenty of chances to network, so you can easily swap notes and learn from the real-world experiences of others.

With attendees coming from all sorts of industries and universities, you'll probably meet people working on similar things to you. But don't miss the chance to chat with folks in different fields – that's often where the really interesting new ideas in simulation come from!

Aside from the usual breaks, we've got specific networking times planned throughout the event:

Evening Banquet – Tuesday 3rd June

18:00 Drinks Reception
18:30 Evening Banquet

FOLLOWED BY our legendary.... AFTER DINNER GAME!

Back by popular demand is the after-banquet challenge, a competition of skill unrivalled in its levels of buffoonery and problem solving. So, prepare yourselves for the 2025 'experiment'

Conference Exhibition

In addition to our partnered sponsors, during breaks and lunches the Dassault Systèmes team will be exhibiting our extensive range of solutions to industry challenges and workflows. Our technical team will be providing a combination of interactive stands, allowing attendees to get hands-on, and demonstration models to highlight key capabilities within these solutions.

Sponsors

Our sponsors are a vital part of what makes the SIMULIA EURONORTH RUM so valuable. They bring a wealth of knowledge, hands-on experience, and innovative solutions that can truly help you streamline and enhance your engineering workflow. SIMULIA is delighted to acknowledge the partners who are contributing to the 2025 EURONORTH SIMULIA Regional User Meeting.

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